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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,347	07/10/2003	Tetsujiro Kondo	450100-04657	2741

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EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/617,347	KONDO ET AL.
Examiner	Art Unit	
James S. Wozniak	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 10 July 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 7/10/2003 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) Notice of Informal Patent Application
6) Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 7/10/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specification

2. The disclosure is objected to because of the following informalities:
On Page 13, "Fig. 14" should be changed to --Fig. 4--.
Appropriate correction is required.
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
The following title is suggested: --Information Encoding Apparatus And Method, Information Decoding Apparatus And Method, and Recording Medium Utilizing Spectral Switching for Embedding Additional Information in an Audio Signal--.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 6-10** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 6 and 8-10 recite a second determining means/step that determines whether only one of first and second frequency levels is below the minimum audible level when switched. The specification does not disclose such a decoding means/step. Instead the specification discloses a decoder which performing the inverse of an encoding process. In the encoding process, it is first determined whether both spectra are above an audible curve level and then determined whether only one of these spectra is below the curve when switched. The decoder, as disclosed in the specification, performs the opposite of this encoder process in that it first checks for one spectra to be above an audible curve and then, in a second determining means, validates that the spectra have been switched (to check for the presence of embedded additional data, i.e., 0 or 1) by switching the decoded spectra, and determining whether both levels are *above* an audible threshold (*see specification, page 23, lines 7-11*). Thus, since the claimed second

determining means/step is not disclosed in the specification, claims 6 and 8-10 fail to comply with the written description requirement.

The dependent claims further limit rejected independent claim 6, and thus, also fail to comply with the written description requirement.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 6-10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 6 and 8-10, applicants claimed:

A second determining means/step for determining whether only one of first and second frequency levels is below the minimum audible level when switched.

With respect to Claim 6, in regards to the above noted means/step, the specification describes a second determining structure at a decoder for determining whether both levels are *above* an audible threshold (*see specification, page 23, lines 7-11*), but fails to show or describe specific structures corresponding to the claimed means/step.

Thus, the specification does not disclose adequate structure for performing the recited functions, thereby failing to particularly point out and distinctly claim the invention as required by the second paragraph of section 112. Because no structure disclosed in the embodiments of the invention actually performs the claimed functions, the specification lacks the corresponding structure as required by 35 U.S.C. 112, 6th paragraph, and fails to comply with 35 U.S.C. 112, 2nd

paragraph.

"If one employs means plus function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112." In re Donaldson Co., 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (in banc).

If there is no disclosure of structure, material or acts for performing the recited function, the claim fails to satisfy the requirements of 35 U.S.C. 112, second paragraph. Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1376, 58 USPQ2d 1801, 1806 (Fed. Cir. 2001); Cardiac Pacemakers, Inc. v. St. Jude Med., Inc., 296 F.3d 1106, 1115-18, 63 USPQ2d 1725, 1731-34 (Fed. Cir. 2002). MPEP 2100-217.

Further, the written description is objected to in light of 35 U.S.C. 112 1st paragraph for failing to show any corresponding structure of the claimed means. (See *In re Knowlton*, 481 F.2d 1357, 1366, 178 USPQ 486, 492-93 (CCPA 1973). Conversely, the invocation of 35 U.S.C. 112, sixth paragraph does not exempt an applicant from compliance with 35 U.S.C. 112, first and second paragraphs. See *Donaldson*, 16 F.3d at 1195, 29 USPQ2d at 1850; *Knowlton*, 481 F.2d at 1366, 178 USPQ at 493. See MPEP 2100-217-218).

The dependent claims further limit rejected independent claim 6, and thus, are also indefinite.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. **Claims 1-10** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1 and 6 are drawn to an encoding and decoding apparatus capable of encoding/decoding additional information. In order for a claimed invention to be considered statutory under 35 U.S.C. 101, it must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result” (*State Street*, 149 F.3d at *>1373-74<, 47 USPQ2d at 1601-02). Since the final result of the claimed invention is abstract encoded audio data (in the case of an encoder) and decoded abstract audio data (in the case of a decoder) and not a tangible real-world output (for example, recoding the encoded audio signal on a disc (specification, page 19) or playing decoded audio and displaying the additional information), claims 1 and 6 are directed to non-statutory subject matter. The dependent claims further limit rejected independent claims 1 and 6, and thus, are also directed to non-statutory subject matter.

Claims 4 and 9 are drawn to a “program” data structure *per se*, stored on a “recording” medium, as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a.

Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data

structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized to produce a tangible, concrete, and useful result. In independent claims 4 and 9, no such result is obtained because there is no claimed computer readable medium encoded with a program, which when executed by a computer, performs the claimed method. Claims 4 and 9 also fail to produce a tangible result for the reasons noted above with respect to Claims 1 and 6. Thus, claims 4 and 9 contain non-statutory subject matter.

Claims 5 and 10 are drawn to a "program" *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional

interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized. Also, claims 5 and 10 fail to produce a tangible result for the reasons noted above with respect to Claims 1 and 6.

Although the process in **claims 3 and 8** is directed to a seemingly statutory process, featuring encoding/decoding steps identical to those respectively recited in claims 5 and 10, these claims are directed towards non-functional descriptive material (i.e., description of program steps) respectively by virtue of Claims 5 and 10. Claims 5 and 10 indicate that the encoding/decoding steps are part of a computer program. In claims 3 and 8, the data structure steps are not encoded on a computer readable medium that enables the data structure's functionality to be realized when executed by a computer (*see above*). Thus, claim 1 is directed to non-statutory subject matter, for the same reasons as claims 5 and 10.

Allowable Subject Matter

10. **Claims 1-5** would be allowable if rewritten to overcome the 35 U.S.C. 101 rejections (see above).

11. The following is a statement of reasons for the indication of allowable subject matter:

With respect to **Claims 1 and 3-5**, the prior art fails to explicitly teach or fairly suggest, either individually or in combination, an audio encoding method and system that adds and indicates the presence of additional encoded information in an audio signal (i.e., copyright information, lyrics, artists' names, and music categories, see specification, Page 19) by converting an input audio signal into a spectrum, removing the spectra of frequencies having levels below a minimum audible level curve, and adding and indicating the presence of extra information by: determining whether first and second frequency spectrum levels are above the audible level curve (*See Fig. 5 and specification, page 15*), switching frequency levels of the first and second frequencies if the first determination proves valid, and comparing the switched frequencies to an audible level curve to determine if one out of the two frequency spectra is above the curve (*See Fig. 6 and specification, pages 15-16*). If the second condition holds valid then the audio signals are switched, the additional information is added, and the audio signal is encoded along with the additional information.

The closest prior art is Srinivasan (*U.S. Patent: 6,272,176*). Srinivasan discloses a system and method for adding ancillary, non-audio information to an audio system (*Col. 7, Lines 10-26*). Srinivasan teaches that this information is indicated and encoded by swapping a spectral

amplitude at a particular index with a maximum spectral amplitude in close proximity (*Col. 11, Lines 1-15*). Srinivasan also notes the well-known concept of audio compression based on audibility levels (*masking higher, non-audible frequencies, Col. 10, Lines 5-19 and Lines 48-59*). Although Srinivasan discloses swapping frequencies to indicate non-audio ancillary information, Srinivasan does not explicitly teach or even suggest the test conditions recited in the claimed invention, wherein two frequency spectra both have to be above an audibility curve initially and one of the two frequency spectra has to be above and the other below an audibility curve when switched to encode additional information in an audio signal.

Claim 2 further limits Claim 1, and thus, also contains allowable subject matter if claim 1 was amended to overcome the 35 U.S.C. 101 rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Todd (*U.S. Patent: 5,581,653*)- discloses the well-known concept of removing spectral components below an audible threshold in audio coding.

Moskowitz et al (*U.S. Patent: 5,822,432*)- discloses encoding a watermark in higher inaudible frequencies of an audio signal.

Fuchigami et al (*U.S. Patent: 5,960,398*)- discloses a method for encoding copyright information in an audio signal based on variations in digital signal power levels.

Hirai (*U.S. Patent: 6,850,619*)- discloses a watermarking method using frequency shifting.

Srinivasan (*U.S. Patent: 7,006,555*)- discloses a method of encoding a binary bit of ancillary information by frequency swapping.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached at (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
2/5/2007

DAVID HUDSPETH
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